

Signet-Ring Cutaneous Squamous Cell Carcinoma Arising on the Back of the Finger

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Key Words

Signet-ring cell · Squamous cell carcinoma · Sun damage

Abstract

A variety of pathologic variants of cutaneous squamous cell carcinoma (SCC) has been reported, and the signet-ring variant of cutaneous SCC is extremely uncommon. We reported an 83-year-old man with signet-ring SCC arising on the back of the finger. As far as we know, only 4 cases have been described in detail, and one dermatopathologic report focused on the presence of signet-ring cells briefly described in clinical data of 6 cases. Interestingly, in these reports, the skin lesions of 10 cases occurred exclusively in the head and neck area. This case involved a skin lesion on the back of the finger and is thus the first reported case of signet-cell cutaneous SCC that did not arise in the head and neck area. The location of this lesion, together with the histological findings compatible with actinic keratosis, support the hypothesis that the development of signet-ring SCC is related to ultraviolet light-induced damage.

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Introduction

Cutaneous squamous cell carcinoma (SCC) is derived from suprabasal epidermal keratinocytes and is very commonly encountered in clinical practice. It exists in many morphological forms, including keratinizing, non-keratinizing, clear, acantholytic, spindle and basaloid subtypes. The signet-ring variant of cutaneous SCC is extremely uncommon. The first case was reported by Carmer and Heggeness [1], but very few cases have been

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reported to date [2–5]. Here, we report a case of signet-cell cutaneous SCC arising on the back of a finger of an elderly male patient.

Case Report

An 83-year-old man presented with a skin lesion on his left hand. He had no medical history of note. He first noticed the skin lesion 3 years ago and it had gradually enlarged. Physical examination revealed a 31 × 21 mm, reddish-brown, erosive macule on the back of the left fourth finger (fig. 1a). Medical imaging, including PET/CT, could not detect any other neoplastic lesions on the body. A biopsy taken from the lesion showed a thickened epidermis with parakeratosis, but no granular layer. We also observed an abnormal stratified arrangement, cytologically atypical keratinocytes (fig. 1b) and an inflammatory cell infiltrate in the dermis. Notably, numerous signet-ring cells with crescentically compressed nuclei were seen extending to the cellular border (fig. 1c). The results of mucicarmine and periodic-acid Schiff staining were both negative. Based on these findings, a histological diagnosis of solar keratosis, which was expected to advance to SCC, was made. The lesion was therefore excised with a 5-mm margin and the wound was covered by a skin graft.

Histological examination of the whole tumor revealed irregular masses of proliferating tumor cells with invasive, atypical epidermal keratinocytes. Horn pearl cells and cells with individual keratinization were also present. The border of the lesion showed focal parakeratosis and a loss of normal epidermal stratification. Signet-ring cells were present, both at the border and throughout the tumor (fig. 1d). Immunohistochemistry revealed that the tumor cells were negative for CK20, carcinoembryonic antigen, vimentin, HMB45, Melan A and desmin. A final diagnosis of signet-ring SCC was made. The patient has been monitored for 3 years, but no recurrence has been noted to date.

Discussion

Signet-ring cells are cells in which the nucleus is crescentically compressed to the cellular border, resulting in a signet-ring appearance. This cell type is more commonly found in mucinous gastric carcinoma, although it is also present in a variety of other neoplasms including breast and pancreatic adenocarcinoma, leiomyosarcoma, liposarcoma and lymphoma. In skin tumors, the presence of signet-ring cells is indicative of metastatic adenocarcinoma, although these cells are only rarely found in some cutaneous neoplasms including SCC, basal cell carcinoma and mycosis fungoides.

Signet-ring cutaneous SCC is thus a very rare lesion and, as far as we know, only 4 cases have been described in detail [1–4] (table 1). In addition, one dermatopathologic report focused on the presence of signet-ring cells briefly described in clinical data of 6 cases [5]. Interestingly, in these reports, the skin lesions occurred exclusively in the head and neck area with 3 cases of a lesion on the forehead and the others on the neck, upper lip, canthus, cheek, temple, ear and frontal scalp. This suggests that the development of signet-ring cutaneous SCC might be related to ultraviolet light exposure.

This case involved a skin lesion on the back of the finger and is thus the first reported case of signet-cell cutaneous SCC that did not arise in the head and neck area. A number of skin tumor types are known to occur more frequently in the head and neck area and these tumors are not always associated with actinic damage. It is also well established that some chemicals, scar formation and immune suppression are involved in the pathogenesis of

cutaneous SCC. The location of this lesion on the back of the finger, together with the histological findings compatible with actinic keratosis, support the hypothesis that the development of signet-ring cutaneous SCC is related to ultraviolet light-induced damage.

Disclosure Statement

The authors declare no conflict of interest.

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Table 1. Summary of cases of cutaneous signet-ring SCC reported in the literature [1–5]

Case	Age/Sex	Location	Ref.
1	69/M	Forehead	1
2	50/M	Neck	2
3	84/F	Upper lip	3
4	67/M	Left canthus	4
5	79/F	Right cheek	5
6	82/M	Left temple	5
7	83/M	Right ear	5
8	80/M	Forehead	5
9	87/M	Frontal scalp	5
10	76/M	Forehead	5
Our case	83/M	Left hand	

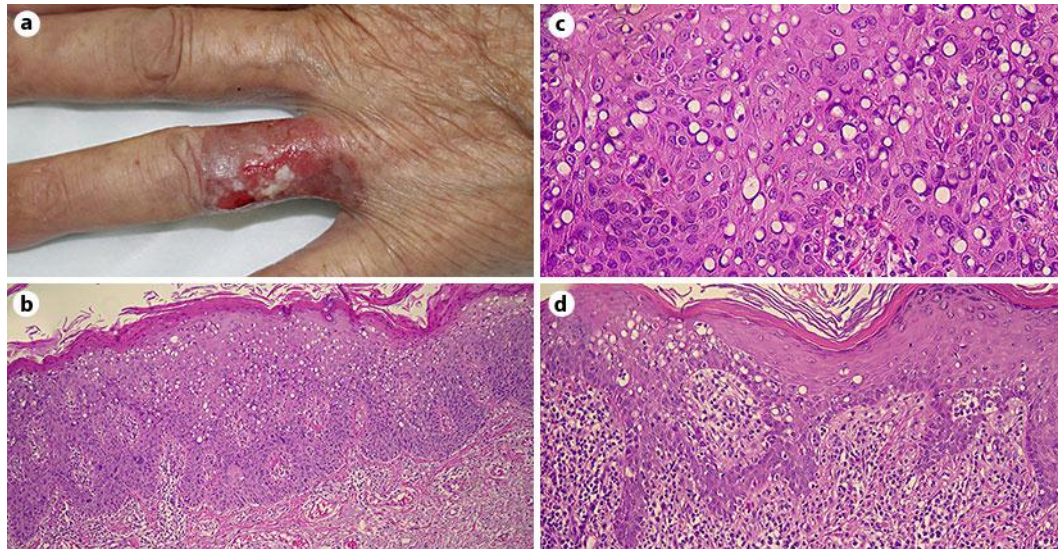


Fig. 1. Clinical and histological findings. **a** Reddish-brown, erosive macule on the back of the left fourth finger. **b** The biopsy specimen showed a thickened epidermis with parakeratosis, but no granular layer. An abnormal, stratified arrangement and cytologically atypical keratinocytes were also observed (HE staining, $\times 40$). **c** Numerous signet-ring cells with nuclei that are crescentically compressed to the cellular border (HE staining, $\times 250$). **d** The border of the skin lesion also shows focal parakeratosis, loss of the normal stratified arrangement of the epidermis and the presence of signet-ring cells (HE staining, $\times 100$).